

WHAT IS CLAIMED IS:

- 1 1. A vehicle seat for use with a vehicle, the vehicle seat
2 comprising:
3 a head restraint arrangement having a headrest and a support member;
4 a seatback having a frame and a bracket arrangement attached to the
5 frame; and
6 a hinge device attached to the frame and the head restraint
7 arrangement, the hinge device including a hinge having a first hinge portion
8 pivotally connected to the bracket arrangement and a second hinge portion slidably
9 connected to the bracket arrangement;
10 wherein upon application of a rearward force on the hinge, the hinge
11 lengthens upwardly and moves the head restraint arrangement from an initial
12 position to a support position.
- 1 2. The vehicle seat of claim 1 wherein the hinge includes first
2 and second hinge portions are pivotally connected together by a connecting member.
- 1 3. The vehicle seat of claim 2 wherein the hinge device further
2 comprises a bracket arrangement having a first slot configured to receive a first
3 shaft, the first shaft slidably connecting the first hinge portion and the bracket
4 arrangement.
- 1 4. The vehicle seat of claim 3 wherein the bracket arrangement
2 further comprises a second slot configured to receive a second shaft, the second
3 shaft slidably connecting a linking member and the bracket arrangement, the linking
4 member being operative to couple the first and second shafts.
- 1 5. The vehicle seat of claim 4 wherein a portion of the second
2 slot extends in a different direction from the first slot.

1 6. The vehicle seat of claim 2 further comprising an impact
2 target that engages the connecting member to move the head restraint arrangement
3 from the initial position to the support position.

1 7. The vehicle seat of claim 6 wherein the impact target includes
2 an upper portion and a lower portion, the upper portion located above and connected
3 to the lower portion and configured to engage the connecting member.

1 8. The vehicle seat of claim 1 further comprising a lock
2 mechanism that includes a first locking element and a second locking element
3 engageable with the first locking element, wherein the first and second locking
4 elements are configured to allow movement of the head restraint arrangement toward
5 the support position while inhibiting movement toward the initial position.

1 9. The vehicle seat of claim 8 wherein the lock mechanism
2 further comprises a spring that engages the second locking element to urge the
3 second locking element into engagement with the first locking element.

1 10. The vehicle seat of claim 8 wherein the second locking
2 element is disposed on the second shaft.

1 11. A vehicle seat for use with a vehicle, the vehicle seat
2 comprising:
3 a head restraint arrangement having a headrest and a support member;
4 a seatback having a frame; and
5 a hinge device including:
6 a bracket arrangement attached to the frame, the bracket
7 arrangement having first and second slots;
8 a hinge pivotally connected to the bracket arrangement at a
9 first end and moveably coupled to the first slot at a second end; and
10 a linking member moveably coupled to the first and second
11 slots and adapted to receive the head restraint arrangement;

12 wherein upon application of a rearward force the hinge lengthens
13 vertically and is configured to move the head restraint arrangement from an initial
14 position to a support position.

1 12. The vehicle seat of claim 11 wherein the linking member is
2 connected to a connecting plate that is attached to a sleeve that receives the support
3 member of the head restraint arrangement.

1 13. The vehicle seat of claim 11 wherein the hinge includes first
2 and second hinge portions connected together by a connecting member, wherein the
3 first and second hinge portions define an angle of less than 180 degrees when the
4 head restraint arrangement is in the initial position and wherein upon application of
5 a rearward force the first and second hinge portions are configured to move such
6 that the angle increases.

1 14. The vehicle seat of claim 11 further comprising an impact
2 target that engages the hinge to move the head restraint arrangement from the initial
3 position to the support position.

1 15. The vehicle seat of claim 11 further comprising a lock
2 mechanism that includes a first locking element and a second locking element
3 engageable with the first locking element, wherein the first and second locking
4 elements are configured to allow movement of the head restraint arrangement toward
5 the support position while inhibiting movement toward the initial position.

1 16. The vehicle seat of claim 15 wherein the first locking element
2 is integrally formed with the bracket arrangement and the second locking element
3 is attached to a shaft disposed in the second slot.

1 17. The vehicle seat of claim 15 wherein the lock mechanism is
2 configured to selectively lock the head restraint arrangement in one of multiple
3 support positions.

1 18. The vehicle seat of claim 15 wherein a spring that engages the
2 second locking element to urge the second locking element into engagement with the
3 first locking element.

1 19. The vehicle seat of claim 18 wherein the spring is attached to
2 the connecting plate and contacts the second locking element on a side opposite the
3 first locking element.

1 20. A vehicle seat for use in a motor vehicle, the vehicle seat
2 comprising:

3 a head restraint arrangement having a headrest and a support member;
4 a seatback having a frame, the frame having first and second side
5 portions and an upper member disposed between the side portions; and
6 a hinge device disposed proximate to the upper member, the hinge
7 device including:

8 a bracket arrangement having first and second slots;
9 a hinge having a first hinge portion pivotally connected to the
10 bracket arrangement and a second hinge portion connected to the first hinge portion
11 by a connecting member and connected to the first slot of the bracket arrangement;

12 a linking member connected to the second hinge portion by
13 a first shaft and connected to the second slot by a second shaft;

14 a connecting plate connected to the first and second shafts and
15 connected to a sleeve adapted to receive the head restraint arrangement; and

16 a lock mechanism configured to selectively lock the head
17 restraint arrangement in one of multiple support positions, the lock mechanism
18 including a fixed locking element disposed on the bracket arrangement and a
19 movable locking element disposed on the second shaft;

20 wherein upon application of a rearward force the hinge lengthens
21 vertically and operates with the linking member to move the head restraint
22 arrangement from an initial position to a support position.